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## Buffalo on the Beaches: Electronic Imaging of Historical Sources

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## **Buffalo on the Beaches: Electronic Imaging of Historical Sources**

**Richard Condrey, Faye Phillips,  
and Tony Presti**

"We called it La Riviere aux Boeuf, that is, the River of Bullocks, by reason of the great number of them there was about it. These bullocks are very like ours; there are thousands of them, but instead of hair they have a very long curled sort of wool." Thus did Henri Joutel in 1685 describe what we believe to be the Guadalupe River in Texas in his "Historical Journal of Monsieur de la Salle's Last Voyage to Discover the River Mississippi."<sup>1</sup> The "bullocks," "boeuf,"

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<sup>1</sup> B. F. French, *Historical Collections of Louisiana, Embracing Many rare and Valuable Documents Relating to the Natural, Civil and Political History of that State*, Compiled with Historical and Biographical Notes, and An Introduction by B. F. French, Part 1 (New York: Wiley and Putnam, 1846), 116.

that Joutel described were American bison. In 1686, near Apalachioca, Florida, and Dothan, Alabama, explorer Marcos Delgado described the beasts he encountered as "a kind of animal like cows."<sup>2</sup> The buffalo are gone from the coasts of Florida, Alabama, Louisiana, and Texas, but the documents describing the area when they existed are still available.

As society and scientists wrestle with concerns and uncertainty over global climate change, this wealth of potentially valuable information lies largely unused and deteriorating. These important links with historical ecology are the written and illustrated record of man's domination of the planet. They are contained in the rare and unindexed first-hand accounts of our ancestors. Though the record is diffuse and sometimes misleading, it is often rich and incredibly insightful.

While the current condition of these works is an impediment to their scientific study, a pilot project has converted this record into a machine readable, searchable, and speakable form. Scientists and librarians at Louisiana State University, have successfully converted B. F. French's 1846, five volume, *Historical Collections of Louisiana* into an electronic text. These eyewitness accounts of the early

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<sup>2</sup>Robert S. Weddle, *Wilderness Manhunt: The Spanish Search for La Salle* (Austin, TX: University of Texas Press, 1973), 80. Marcos Delgado's Diary ("Derrotero") is contained in the Archivo General de Indias, Audiencia de Mexico, 1671-1685 (61-6-20). There are transcripts (Dunn Transcripts) at the University of Texas, Austin.

colony describe a system which was more like the Amazon than the constrained and degraded system which exists today. They depict a wild and sweet river, teeming with fish, flowing through the ancient virgin forests of America's heartland into the Gulf of Mexico through a mouth that extended for more than 160 miles and occupied much of what is now South Louisiana.

Reformatting rare materials broadens access to them for all scholars and students. While electronic imaging does not take the place of traditional conservation procedures it does lessen use of the original documents thus prolonging their present condition and future life.

The electronic imaging of French's volumes was accomplished through special funding. In 1991, the Special Collections Division of the Louisiana State University (LSU) Libraries, Baton Rouge, received a grant of \$285,000 to establish an electronic imaging laboratory, a local area network, and a disabled users adaptive computer center. Roughly \$167,000 was allocated to purchasing equipment that would provide digital imaging and scanning capabilities for the LSU Libraries. The remainder of the grant purchased equipment for the local area network and the adaptive computer center for disabled users. The grant was received from the Louisiana Education Quality Support Fund (LEQSF). Based on an oil and gas settlement between the state and federal governments, Louisiana created a permanent trust fund from which earnings are placed in a support fund, the LEQSF. Funds were appropriated by the Louisiana Board of Regents.



Hill Memorial Library, the home of Special Collections at LSU, is the location of the "Electronic Imaging Laboratory." Working with a local company, Key Systems Incorporated, project staff designed systems that would scan, digitize, do optical character recognition, index, provide images, and printed output of rare books, manuscripts and photographs from the collections.

French's *Historical Collections of Louisiana* were chosen as the pilot project because of the information contained, the relative rarity of the publication, and because the publication is in the public domain, no longer under copyright. French's volumes contain early travel logs of explorers to Louisiana and the Mississippi River in some of the first translations from the French and Spanish. Co-principal investigator for the project, Dr. Richard Condrey, has used the publication extensively in his work on the historical ecology of Louisiana.

The five volumes were printed between 1846 and 1853. The first volume was printed on a hand-operated printing press which caused the pages to have a warped effect. Surprisingly this created a problem in scanning which foxing and staining did not. Other volumes printed on automated presses did not have these problems.

The scanning and optical character recognition (OCR) was accomplished using Xerox's Kurzweil K5200. Each page was carefully turned and placed face down on the system's book-friendly scanner, at a rate of forty-five seconds per page. Once a volume had been scanned, a verification file was developed. This procedure, which took three to five hours and used the first five to eight pages of

a work, allowed the researchers to "teach" the machine the correct identity of characters of which it was unsure. In addition to the warp of the paper in volume one, other problems encountered included broken type, poor inking, and long "s"s. As each volume was scanned, however, the software was "taught" to remember the broken type and long "s"s. After the verification file was completed, optical character recognition was accomplished overnight in an operator-free environment. Error rates among the five volumes varied, reflecting both the quality of the text and the learning curve of the researchers. However, accuracy rose with each volume scanned.

The scanned images of each page were stored in a TIFF file and the text was edited in WordPerfect 5.1. Correction of the electronic text proceeded in three steps, all requiring cross reference to the image of the original text for verification. First the electronic text was machine-searched using the spell check feature of WordPerfect 5.1. This procedure requires three to five minutes per page and normally locates three to fifteen errors per page. Next, the text was read to search for errors such as correctly spelled but incorrect words (such as a 'had' which was incorrectly recognized as a 'bad'). Italics were added as needed and French and Spanish words were verified. This procedure required a normal reading level of five to eight minutes per page and normally locates zero to ten errors per page. Finally, a draft, double-spaced hard copy was produced and cross-checked against the original text, line by line. This was by far the most time consuming and tedious. By

this time machine errors averaged one error per page, and require ten to twenty minutes reading time per page.

Combined time for scanning, editing, and correcting ran between twenty-three to thirty-four minutes per page. Cost for scanning, editing and correcting a 250 page volume ran about \$1,925 of staff time.

The text was stored and edited in Windows WordPerfect on erasable optical cartridges which will hold 1.0 gigabytes. These were used throughout the editing process. When the final edited version of the French volumes was completed the master file was stored on 940MB WORM (write-once-read-many) optical cartridges. These master files will be utilized as "archival" backups and as technology changes the data on the cartridges can be transferred to the next generation of storage medium whatever that might be.

The final product produced is a CD-ROM containing all five volumes of the *Historical Collections of Louisiana* in WordPerfect which is key-word searchable. Because the French volumes were never indexed, the ability to do key word searching makes the publication a much more usable research tool. On the CD-ROM are the TIFF files of the images of the original pages of the volumes. Researchers are able to view the edited version of the text, and if desired, pull up the image file of the original page. Pages may be printed out from the edited version or from the image version. IBM Bookmanager Build utility provides the embedded navigation software.

Once the editing was completed a master CD-ROM was produced using mastering equipment in another department

on the LSU campus. The master was then sent to a CD-ROM replicating company and 300 copies produced. The CD-ROM edition of B.F. French's *Historical Collections of Louisiana* can be purchased from the Louisiana State University Press for \$50.00.

Buffalo may no longer run along the rivers and beaches of the Gulf of Mexico, but the documents relating to their existence and to the early history of the area are being preserved through the modern capabilities of electronic imaging.

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